

INSIDE:
Uses, Training, Benefits,
Requirements

Microcomputers in Auditing: An Overview

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PAYOFF IDEA. Although microcomputer hardware, software, and communications have improved auditing techniques in many organizations, there is still much to be learned about this new technology. With the proper planning, implementation, and training, microcomputers can be adapted to most environments to improve audit productivity and quality. This article presents an overview of microcomputer technology and identifies the major issues in their use as audit tools.

PROBLEMS ADDRESSED

Auditing is a complex and iterative process in which data from many different sources is analyzed. Tests and reviews performed in the audit determine patterns that suggest subsequent steps in further information gathering; any step could trigger a new audit direction. The auditor's objectives are to assess the relevance of the data, detect signs of incorrectness, and make recommendations for improvement.

Because the auditor is usually a member of an extremely mobile investigative team (traveling 40 to 60 percent of working time), portable microcomputers represent a great advancement in auditing techniques. They can:

- Capture, sort, and analyze audit and financial information
- Minimize time spent in financial scheduling
- Automatically perform previously manual tasks

The following paragraphs describe requirements for automated support and highlight the advantages of portable microcomputers.

Because predicting all auditing contingencies at remote sites is impossible, auditors require off-site access to a centralized auditing software file. Portable microcomputers can provide this access.

The auditor cannot depend on the availability and compatibility of the auditee's host software; in addition, auditee management may not wish to help the auditors set up an operating environment that may interfere with ongoing processing. If the auditor can supply a computer system, audit independence is ensured.

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Working papers are often dispersed throughout the investigation site, and files, people, and equipment must be sought out; therefore, the physical mobility of auditing equipment is important. Portable microcomputers that are lightweight, easy to set up, and durable represent an inexpensive way to achieve this mobility.

It is most cost-effective to analyze data and produce reports at the scene of the investigation. A portable microcomputer that can sort, compare, format, and produce tables and graphs can achieve this goal.

The most important component of such a portable microcomputer system is versatile communications software and hardware. This software must allow the auditor, who operates as a member of a team, to share information with other members of the group. To access central files, the system must be able to operate as an intelligent terminal to a host computer.

In addition, the system must be easy to learn and use because auditors are not computer experts.

This article discusses some of the benefits that have been derived from the implementation of microcomputers in the audit function and provides tips on how to initiate such automation within the audit department.

MICROCOMPUTERS AS AUDIT TOOLS

A recent study by Arthur Young & Co found that auditors with their own microcomputers were far less likely to disrupt their clients' data processing operations. The CPA staff could perform the audit themselves rather than rely on the personnel of the audited firm to provide computer support. In addition, the auditors were able to work more independently and productively and produce high-quality reports. Other Big 8 firms have reported similar benefits and productivity gains. Several firms stated that microcomputer technology has improved their audit effectiveness and efficiency by approximately 15 to 25 percent. Some of the specific benefits cited were:

- Spreadsheet software facilitates spreadsheet modification.
- Manual handling, sorting, calculation, and recalculation of data can be eliminated or greatly reduced.
- Computer-prepared data is more accurate, timely, and retrievable than data prepared manually.
- Cumulative recording of data decreases work in subsequent cycles.
- Calendars and tickler files reduce the number of missed due dates.
- Word processing accessible to professional employees reduces turnaround time for drafts, rewrites, and final documents.
- Graphic displays of information contained in data bases or spreadsheets greatly enhance the presentation of data.

The federal government also is conducting studies to determine how microcomputers can be used in the audit environment. In 1983, the Computer Audit Committee under the President's Council on Integrity and Efficiency launched a program to train several thousand auditors and investigators to use portable microcomputers. The following benefits have thus far been realized:

- Department of Interior auditors using microcomputer technology to ana-

lyze royalty payment data uncovered a \$1.5 million underpayment by oil and gas companies.

- The Computer Audit Committee reported that time spent performing certain types of audits can be reduced by 24 to 75 percent.
- The Department of Transportation credited microcomputer technology for helping it gain 318 indictments, 272 convictions, and \$40 million in fines. Microcomputers also helped the department's auditors uncover widespread bid rigging in federal construction projects.
- In addition to the benefits cited by other agencies and firms, the General Accounting Office has found that microcomputers can provide the ability to access agency data directly from centralized systems for use in audit analyses; share analyses and findings with sibling agencies (e.g., Congressional Budget Office and Congressional Relations Office), and share application and develop templates to ease data transcription and analysis. This allows auditors to improve their execution of collateral responsibilities, including budgeting, management reporting, accounting, and audit and financial reporting.

Other federal, state, city, and county audit organizations are beginning to integrate microcomputers into their audit operations. Such organizations as NASA, Department of Agriculture, Department of Education, Department of Defense, Air Force Audit Agency, Defense Contract Audit Agency, and Naval Audit Service have implemented microcomputer programs, and such organizations as California State Auditor General's Office, County of San Bernardino Auditor-Controller Office, and City of New York Auditor's Office have similar programs.

AUDIT IMPLEMENTATION OF MICROCOMPUTERS

Auditors must develop an organizational approach to managing rapidly changing microcomputer technology. A successful integration of this technology into the workplace should have detailed planning, implementation, and monitoring phases.

Planning

To determine the role and focus of the microcomputer in the audit department, the auditor must determine:

- What functions the microcomputer will be used for
- Who will use and maintain the microcomputer
- What long-range goals (e.g., five years) the microcomputer can attain

Figure 1 and Table 1 list popular microcomputer audit applications. These lists can help the audit department examine its needs.

To determine who will use the computer and how much training is needed, the department should conduct interviews and distribute questionnaires to assess auditors' experience and skills in the following areas:

- Data processing and microcomputers
- Analysis (e.g., math and logic)
- Automated tools.

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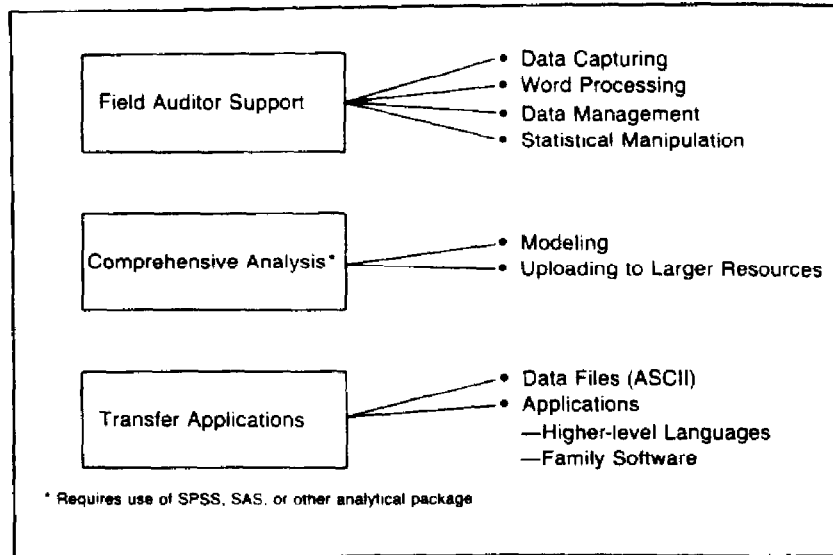


Figure 1. Microcomputer Technology Applications

Implementation

Implementation must be orderly and gradual and cause minimal disruption of the users. Pilot projects can help determine the suitability of the microcomputer and help an organization determine what policies and guidelines should be established to facilitate and control microcomputer application. For example, a nationwide CPA firm used a six-month pilot project to identify five audit areas in which microcomputers could be used to improve their services (see Table 2).

By allowing the users to experiment with them, the pilot project also helped the organization decide how to use microcomputers. The project also helped the organization identify reasonable integration goals (see Table 3).

Monitoring

Microcomputer implementation, like other drastic procedural changes, can have wide-ranging effects on the organization. The organization should ex-

Table 1. Audit Tasks That Can Be Performed With Microcomputers

- Scheduling
 - Economic Forecasting
 - Calculating
 - Verifying Data
 - Summarizing
- Calculating
- Compiling Statistics
- Work Paper Indexing and Cross-Referencing
- Report Drafting
- Information Transferring

MICROCOMPUTERS

Table 2. Audit Areas

Audit Areas

- Planning
- Analytical Procedures
- Workpaper Filing System
- Narratives
- Financial Statements

pect three phases of transition: education, familiarization, and application. In the education phase, the organization provides orientation sessions and training on the equipment. Individuals usually gain an understanding of computer concepts in this phase. For example, the physical components of the microcomputer (e.g., keyboard, disk drives, terminal) should be explained in terms of input, processing, and output functions. Hands-on training is especially effective for auditors, and tutorials let users learn at their own pace. Each user's skill, aptitude, and initiative should be assessed before training is initiated.

Familiarization helps individuals become comfortable with the microcomputer. Users start to experiment with the new equipment and learn how it can help them execute day-to-day operations. Management should be patient during this phase because only through practice can users become competent on the microcomputer.

Table 3. Microcomputer Audit Integration

APPLICATIONS

Education Phase

Client accounting data
Time and budget data
Trial balances and working papers
Memo and report generation
Adjusting and updating financial data
Complete documentation
Drafting final documents

Familiarization Phase

Spreadsheet analysis
Designing audit programs
Simple analytical review procedures
Sampling and results analysis
Controls analysis worksheet

Application Phase

Sophisticated analytical review procedures
Access client files and remote data bases
Generalized audit software functions
Modeling and decision support functions
Audit file collection
Continuous monitoring

GOALS

Audit Process Automation

Overall audit efficiency
Automation of time-consuming activities
Improved time and budget control
Improved documentation
Reporting efficiency

Mastery of Basic Microcomputer Auditing

Improved audit programs
Efficient evidence collection
Improved evidence analysis

Mastery of Advanced Microcomputer Auditing

Sophisticated computerized functions
Improved auditor decision making
Audit scope enhancement
Improved EDP audit skills
Decision support systems
Standalone data collection
Independent audit files

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In the application phase, auditors become proficient on the system and apply their new skills to old tasks and begin to develop innovative approaches that enhance their audit methodologies.

CONCLUSION

To implement microcomputer technology in the auditing profession, auditors must understand this technology's challenges and implications as well as its benefits. The success of organizations that have introduced microcomputers into their businesses has shown that:

- Developing a plan for microcomputer use and acquisition is essential.
- Gradual, rather than rapid, introduction of the new equipment is more acceptable to users and eases the implementation process.
- Management must educate all members of the organization in the challenges, implications, and benefits of microcomputers.

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For more information on microcomputer packages, refer to Auerbach's *MICROWORLD: Software-Hardware Selection Guide*.